

REMARKS/ARGUMENTS

Applicant has carefully reviewed and considered the Office Action mailed on June 28, 2005, and the references cited therewith. Claims 7, 13, 18, 25, and 32 are amended, no claims are canceled, and no claims are added; as a result, claims 1-33 are now pending in this application.

Telephone Interview Summary

Applicant thanks the Examiner Lamson Nguyen for the courtesy of a telephone interview on September 16, 2005. Applicant recognizes that Examiner Nguyen was only recently transferred the case from Examiner Kristy Haupt's docket. The Examiner and Applicant discussed the pending claims in view of cited references. Points were considered for differentiating the claims from the references.

§102 Rejection of the Claims

Claims 1-12, 17-27, and 29-32 were rejected under 35 USC 102(b) as being anticipated by Prakash. (U.S. Patent No. 6,302,507 B1).

Applicant submits that the Prakash reference appears to describe controlling the over-energy applied to an ink-jet print cartridge in which an operating voltage of the printhead assembly is determined at the time of manufacture and is encoded in the assembly memory device. (See Col. 10, lines 17-21). For example, the Prakash reference states that "At the time [of] manufacture, the turn-on energy [for a printhead] is determined." (Col. 10, lines 35-36). The Prakash reference also states that a "factory calibration can . . . determine the turn-on voltage" for a printhead, i.e., during a "test" print job. (Col. 11, lines 16-17).

In contrast, Applicant believes that the present claimed invention is differentiable from the Prakash reference in that independent claims 1 and 17, as originally filed, each recite "calibrating an operating energy of the printhead based on the measured temperature rise while performing a non-test print job."

Independent claim 7, as amended, recites "applying a test energy to a printhead during a normal printing pass at an energy above an expected turn on energy of the printhead; and measuring a temperature rise of the printhead during the printing pass".

Independent claim 18, as amended, recites “a temperature sensor coupled to the printhead and operable to measure a temperature of the printhead during a “normal” printing scan; and a calibration component coupled to the temperature sensor and operable to variably adjust an operating energy provided to the printhead based on the temperature of the printhead measured “during the printing scan”.

Independent claim 25, as originally filed, recites “means for applying a high energy pulse to a printhead and determining a proper operating energy for the printhead during one or more normal printing scans; and means for comparing temperature changes of the printhead, during the one or more normal printing scans, with an expected temperature change”.

Independent claim 32, as originally filed, recites “a calibration component coupled to the temperature sensor and operable to set an operating energy for the printhead, while the printhead is performing a normal print job, based on thermal characteristics measured during printing”.

Support for the above claim language can be found in the Applicant’s specification, as originally filed, on page 3, lines 5-7, which reads “embodiments enable printhead calibration while performing a print job”, and on page 9, lines 14-16, which reads “the printing swath can be performed during a “normal” printing pass or scan associated with executing a print job”, among other locations.

Applicant respectfully submits that the Prakash reference appears to teach away from the above claim language. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejections of independent claims 1, 7, 17, 18, 25, and 32 and the claims which depend therefrom.

§103 Rejection of the Claims

Claims 13-16 were rejected under 35 USC 103(a) as being unpatentable over Prakash (U.S. Patent No. 6,302,507 B1) in view of Hock (U.S. Patent No. 5,418,558). As noted above, Applicant respectfully submits that the Prakash reference appears to describe controlling the over-energy applied to an ink-jet print cartridge in which an operating voltage of the printhead assembly is determined at the time of manufacture and is encoded in the assembly memory device. (See Col. 10, lines 17-21).

In contrast, independent claim 13, as amended, recites “applying a firing energy to a printhead which is above an expected turn on energy of the printhead to increase the temperature of the printhead while printing a normal print job”. Applicant respectfully submits that applying a firing energy to a printhead while printing a normal print job differentiates independent claim 13 from the Prakash reference.

As such, Application respectfully submits that Prakash does not describe, teach, or suggest each and every element of the Applicant’s independent claim 13, as amended.

The Hock reference appears to describe determining the operating energy of a thermal ink jet printhead using an onboard thermal sense resistor. (See Title). However, the determining appears to be during a “testing” sequence. Hock recites that “a series of temperature samples for different pulse energies is produced for the printhead being tested”. (Col. 4, lines 48-49). In connection with Figure 3, Hock further recites that “a series of pulse bursts of respective stepwise or incrementally increasing pulse energies are applied to the printhead being tested”. (Col. 6, lines 51-54). As such, Applicant does not believe the Hock reference covers the missing aspects of the Prakash reference.

Since the Prakash and Hock references, neither independently or in combination, appear to describe, teach, suggest each and every element and limitation of the Applicant’s independent claim 13, reconsideration and withdrawal of the 103 rejection for independent claim 13, as well as the claims which depend therefrom is respectfully requested.

Claim 28 was rejected under 35 USC 103(a) as being unpatentable over Prakash (U.S. Patent No. 6,302,507 B1) in view of Kneezel (U.S. Patent No. 5,585,825). Claim 28 depends from claim 25. For the reasons provided above, Applicant respectfully submits that neither the Prakash nor the Kneezel references describe teach or suggest each and every element and limitation of independent claim 25. That is, neither Prakash nor Kneezel, either independently or in combination, appear to describe, teach, or suggest “means for applying a high energy pulse to a printhead and determining a proper operating energy for the printhead; and means for comparing the temperature changes of the printhead, during one or more normal printing scans”.

As such, Applicant respectfully requests reconsideration and withdrawal of the 103 rejection for claim 28 which depends from allowable claim 25.

CONCLUSION

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney Gregg W. Wisdom at (360) 212-8052 to facilitate prosecution of this matter.

At any time during the pendency of this application, please charge any additional fees or credit overpayment to the Deposit Account No. 08-2025.



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